

REMARKS

Amendments to the Claims

Applicant amends the claims to include new claims 13 - 19. Claims 10 - 12 are cancelled. Upon entry of the amendment Claims 1 - 9 and 13 - 19 are presented for consideration by the Examiner.

Interview Summary

On September 25, 2007, Counsel for Applicant participated in an interview with Examiner Addisu. Counsel for Applicant pointed out features of the claims that are not disclosed, taught or suggested by U.S. Patent No. 7,147,414 to Mast et al. The arguments discussed with the Examiner are set forth in greater detail below.

Claim Rejections – 35 USC § 102

Claims 1, 4 - 6 and 9 are rejected under 35 USC § 102(e) as being anticipated by U.S. Patent No. 7,147,414 to Mast et al. (hereinafter Mast).

Rejected Claims

Claim 1 recites, in pertinent part:

said drill point including a pair of substantially linear cutting edges inclined rearwardly from a chisel edge at the extreme forward end of said insert, **each said cutting edge defined by an intersection of a substantially planar flute surface and a substantially conical land surface** (emphasis added)

Claim 5 recites, in pertinent part:

said drill point including a pair of substantially linear cutting edges inclined rearwardly from a chisel edge at the extreme forward end of said insert, **each said cutting edge defined by an intersection of a substantially planar flute surface and a substantially conical land surface** (emphasis added)

Each of independent claims 1 and 5 recites a specific structure for the claimed drill point that is not disclosed, taught or suggested by Mast.

Teachings of Mast

The Examiner's discussion of the teachings of Mast spanning numbered pages 2 and 3 of the Office Action issued June 1, 2007 is incorrect. In addition, the Examiner's discussion of Mast fails to identify specifically where the above-quoted structures and relationships recited in Applicant's independent claims are disclosed, taught or suggested.

Each of independent claims 1, 5, and new claim 13 recited "a substantially planar flute surface" that is not disclosed, taught or suggested by Mast. Mast clearly teaches flutes defined by a curved concave surface. The curved shape of the Mast flute surfaces is clearly illustrated in each of Figures 4A - 4D and 3A - 3D. The non-planar configuration of the flutes is apparent where the flutes intersect the insert body of Mast and also where the flutes intersect the trailing edges of the spur cutting portions shown in Mast. As is conventional, the curved concave troughs 69 "of each web thin groove 67 is generally parallel to the adjacent cutting edge 66." This parallel relationship is necessary to produce a substantially linear cutting edge 66. See Mast Figure 3C and column 4, lines 18-24. Mast does not disclose, teach or suggest flutes including substantially planar flute surfaces as recited in Applicant's claims.

The Examiner also argues that Mast teaches land surfaces as recited in claim 1. Claim 1 recites "a substantially conical land surface, said land surface having an axis of curvature offset relative to said rotational axis" and "each said land surface radially approaches said axis of rotation in a direction opposite said cutting direction." Mast does not disclose the configuration of the land surfaces illustrated in Figures 3A - 3D and 4A - 4D cited by the Examiner as meeting the recited claim limitations. Reference numeral 64' of Mast, Figure 4C, refers to the entire spur cutting portion and not a land surface as recited in Applicant's claims. Mast does not disclose, teach or suggest land surfaces configured as recited in Applicant's claim 1.

Claim 5 recites, in pertinent part "each said cutting edge defined by an intersection of a substantially planar flute surface and a substantially conical land surface." Applicant's claim 5 recites structures and relationships not disclosed, taught or suggested by Mast. As previously discussed, Mast does not disclose, teach or suggest planar flute surfaces or conical land surfaces intersecting to define a cutting edge.

Legal Requirements for Rejection Under 35 U.S.C. §102

MPEP § 2131.01 quotes *Verdegaal Bros., Inc. v. Union Oil Company of California*, 814F2d 628, 631 (Fed. Cir. 1987) for the proposition that "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." The identical invention must be shown in as complete detail as is contained in the claim (see MPEP § 2131.01).

The Examiner's discussion of Mast fails to identify specifically where the structures and relationships recited in Applicant's independent claims are disclosed, taught or suggested. The Examiner has failed to present a *prima facie* case of anticipation or obviousness meeting the requirements set forth in the MPEP and relevant case law cited therein.

Claim 1 is not anticipated or obvious in view of Mast. Claims 2-4 depend directly or indirectly from claim 1 and are patentable for at least the reasons stated in support of claim 1.

Claim 4 recites in pertinent part "wherein said drill point defines a flute between said substantially planar first flute surface and a substantially planar second flute surface." Mast teaches only curved flute troughs and does not disclose, teach or suggest flutes comprised of planar flute surfaces. Mast does not disclose, teach or suggest the recitations of claim 4. Claim 4 is patentable for at least these additional reasons.

Mast does not disclose, teach or suggest the drill point configuration recited in claim 5. Mast does not disclose, teach or suggest cutting edges "defined by an

intersection of a substantially planar flute surface and a substantially conical land surface." Claim 5 is not anticipated or obvious in view of Mast.

Claims 6-9 depend directly or indirectly from claim 5 and are patentable for at least the reasons stated in support of claim 5.

Claim 6 recites in pertinent part "wherein said substantially conical land surface has an axis of curvature that is offset from the axis of said shank." Mast does not disclose the configuration of the land surfaces of the drill points illustrated in Figures 3A - 3D and 4A - 4D or any specific relationship between the land surfaces and the axis of the tool holder 12. Mast does not disclose, teach or suggest the land surface configuration and relationships recited in claim 6. Claim 6 is patentable for at least this additional reason.

Claim 9 recites in pertinent part "wherein said drill point includes two linear V-shaped flutes defined by said substantially planar flute surface and a second substantially planar flute surface meeting at a radius." Mast does not disclose, teach or suggest flutes formed of planar surfaces as recited in claim 9. Claim 9 is patentable over Mast for at least this additional reason.

Claims 10-12 are cancelled.

New Claims 13-19

Claim 13 recites in pertinent part as follows:

two diametrically opposed substantially conical land surfaces extending rearwardly and outwardly from a tip of said drill point, **each said land surface having an axis of curvature offset relative to said rotational axis, each said land surface radially approaching said axis of rotation in a direction opposite said cutting direction;**

two diametrically opposed flutes, each said flute defining a linear trough and **comprising a substantially planar first flute surface intersecting one of said land surfaces to form a cutting edge,** said linear troughs arranged to converge as they approach said tip and angularly overlap behind said tip (emphasis added)

Claim 13 recites "two diametrically opposed substantially conical land surfaces" and "each land surface having an axis of curvature offset relative to said rotational axis, each said land surface radially approaching said axis of rotation in a direction opposite said cutting direction." Claim 13 specifies a configuration for the recited land surfaces and a relationship between the recited land surfaces and a rotational axis of the claimed spot drilling insert. The recited structure and relationships are not disclosed, taught or suggested by Mast as discussed previously with respect to claims 1, 5 and 6.

Claim 13 also recites "two diametrically opposed flutes, each said flute defining a linear trough and comprising a substantially planar first flute surface intersecting one of said land surfaces to form a cutting edge." Claim 13 recites a specific configuration for the linear troughs and specifies a relationship between those troughs and other structures of the drill point. The structures and relationships recited in claim 13 are not disclosed, taught or suggested by Mast as previously discussed with respect to claims 1 and 5.

Claim 13 is patentable over the disclosures of Mast for at least these reasons.

Claims 14-19 depend directly or indirectly from claim 13 and are patentable for at least the reasons stated in support of claim 13.

Claim 14 recites, in pertinent part "wherein said linear troughs are not parallel to said cutting edges." The relationship between the recited linear troughs and cutting edges specified in claim 14 is not disclosed, taught or suggested by Mast. Flutes including planar flute surfaces as recited in Applicant's claims, allow the flute trough orientation to be non-parallel relative to a cutting edge formed at the intersection of a flute surface and a land surface, *and still form a substantially linear cutting edge*. Mast clearly teaches a parallel relationship between the flute troughs and cutting edges of the disclosed drill points. The relationship between linear troughs and cutting edges recited in claim 14 is not possible with the curved trough configuration disclosed in Mast. Claim 14 is patentable over Mast for at least this additional reason.

Claim 15 recites, in pertinent part "wherein each said flute comprises a substantially planar second flute surface meeting said first substantially planar flute

surface at a radius to form an obtuse angle." Mast does not disclose, teach or suggest flutes formed of planar flute surfaces as recited in claim 15. Claim 15 is patentable over Mast for at least this additional reason.

Claim 17 recites, in pertinent part "wherein said tip has a diameter and the axis of curvature of said land surfaces is offset from said rotational axis a distance equal to approximately 10% of said diameter." Claim 17 recites a specific relationship between a diameter of the drill tip and the offset of the land surfaces relative to the rotational axis of the drill point that is not disclosed, taught or suggested by Mast. Claim 17 is patentable over Mast for at least this additional reason.

Claim 19 recites, in pertinent part "wherein said first flute surfaces are not parallel to a center plane of said insert body and said linear troughs are not parallel to said cutting edges." Claim 19 recites specific relationships between structures of the claimed insert body that are not disclosed, taught or suggested by Mast. Claim 19 is patentable over Mast for at least this additional reason.

For all the foregoing reasons, Applicant respectfully requests allowance of claims 1-9 and 13-19.

Respectfully submitted,

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